

Claims:

1 1. An implant structural member adapted to receive the head of an implant
2 stem, comprising:

3 an outer surface adapted to articulate within an outer shell which is adapted to
4 articulate within an acetabulum, and a lip; and

5 an inner surface forming a cavity having a generally spherical shape, the inner
6 surface additionally including a web, the web extending around only a portion of the lip of
7 the implant structural member, including an inner surface that is a continuation of the
8 generally spherical shaped inner surface of the implant structural member cavity and
9 shaped to correspond generally to an outer surface of the implant stem head,

10 the web adapted to allow the implant stem head to be inserted into the structural
11 member cavity when the implant stem head is oriented in a first orientation and constrain
12 the implant stem head within the cavity when the implant stem head is oriented in a second
13 orientation and attached to the stem.

1 2. The implant structural member of claim 1 wherein the inner surface of the
2 web is shaped to cooperate with the implant stem head as the implant stem head articulates
3 relative to the implant structural member.

1 3. The implant structural member of claim 1, wherein the web forms a generally
2 D-shaped opening.

1 4. The implant structural member of claim 1, wherein the web comprises a
2 curved edge.

1 5. The implant structural member of claim 1, wherein the implant structural
2 member is comprised of ceramic.

1 6. The implant structural member of claim 1, wherein the implant structural
2 member is comprised of metal.

1 7. The implant structural member of claim 1, wherein the implant stem head is
2 comprised of ceramic.

1 8. The implant structural member of claim 1, wherein the implant stem head is
2 comprised of metal.

1 9. The implant structural member of claim 1, wherein the web comprises an
2 inner surface having a radius of curvature equal to a radius of curvature forming the inner
3 surface of implant structural member.

1 10. An implant structural member adapted to receive the head of an implant
2 stem, comprising:
3 an outer surface adapted to articulate within an outer shell which is adapted to
4 articulate within an acetabulum, and a lip; and

5 an inner surface forming a cavity having a generally spherical shape, the inner
6 surface additionally including a web, the web extending around only a portion of the lip of
7 the implant structural member, including an inner surface that is a continuation of the
8 generally spherical shaped inner surface of the implant structural member cavity and
9 shaped to correspond generally to an outer surface of the implant stem head,
10 the web adapted to allow the implant stem head to be inserted into the structural
11 member cavity when the implant stem head is oriented in a first orientation and constrain
12 the implant stem head within the cavity so that the implant stem head cannot be oriented in
13 the first orientation when the implant stem head is oriented in a second orientation and
14 attached to the stem.

1 11. The implant structural member of claim 10 wherein the inner surface of the
2 web is shaped to cooperate with the implant stem head as the implant stem head articulates
3 relative to the implant structural member.

1 12. The implant structural member of claim 10, wherein the web forms a
2 generally D-shaped opening.

1 13. The implant structural member of claim 10, wherein the web comprises a
2 curved edge.

1 14. The implant structural member of claim 10, wherein the implant structural
2 member is comprised of ceramic.

1 15. The implant structural member of claim 10, wherein the implant structural
2 member is comprised of metal.

1 16. The implant structural member of claim 10, wherein the implant stem head is
2 comprised of ceramic.

1 17. The implant structural member of claim 10, wherein the implant stem head is
2 comprised of metal.

1 18. The implant structural member of claim 10, wherein the web comprises an
2 inner surface having a radius of curvature equal to a radius of curvature forming the inner
3 surface of implant structural member.

1 19. An implant comprising:

2 (a) an implant structural member adapted to receive an implant stem head,
3 comprising:

4 an outer surface adapted to articulate within an outer shell which is adapted to
5 articulate within an acetabulum, and a lip; and

6 an inner surface forming a cavity having a generally spherical shape, the inner
7 surface additionally including a web, the web extending around only a portion of the lip of
8 the implant structural member, including an inner surface that is a continuation of the

9 generally spherical shaped inner surface of the implant structural member cavity and
10 shaped to correspond generally to an outer surface of the implant stem head,
11 the web adapted to allow the implant stem head to be inserted into the structural
12 member cavity when the implant stem head is oriented in a first orientation and constrain
13 the implant stem head within the cavity so that the implant stem head cannot be oriented in
14 the first orientation when the implant stem head is oriented in a second orientation and
15 attached to the stem; and

16 (b) an implant stem head comprising:

17 a generally spherical body having a surface configured to correspond to the web
18 enabling the implant stem head to be inserted into the implant structural member when the
19 implant stem head is in the first orientation; and

20 a cavity for receiving a femoral component.

1 20. The implant of claim 19 wherein the inner surface of the web is shaped to
2 cooperate with the implant stem head as the implant stem head articulates relative to the
3 implant structural member.

1 21. The implant of claim 19, wherein the web is capable of being positioned
2 superiorly within a patient.

1 22. The implant of claim 19, wherein a center point of the implant stem head is
2 not in the same position as a center point of the implant structural member when the
3 implant stem head is positioned within the implant structural member.

1 23. The implant of claim 19, wherein the web forms a generally D-shaped
2 opening.

1 24. The implant of claim 19, wherein the web is comprises a curved edge.

1 25. The implant of claim 19, wherein the implant stem head is comprised of
2 ceramic.

1 26. The implant of claim 19, wherein the implant stem head is comprised of
2 metal.

1 27. The implant of claim 19, wherein the implant structural member is comprised
2 of ceramic.

1 28 The implant of claim 19, wherein the implant structural member is comprised
2 of metal.

1 29. The implant of claim 19, wherein the cavity in the implant stem head
2 comprises an opening positioned on the surface of the implant stem head that is configured
3 to correspond to the web.

1 30. A prosthetic device comprising:

2 (a) a first implant structural member having a generally spherical shape and
3 adapted to articulate within an acetabulum, the first implant structural member comprising a
4 cavity adapted to receive a second implant structural member and including at least one
5 opening in an outside surface of the first implant structural member providing access to the
6 cavity;

7 (b) a second implant structural member adapted to receive an implant stem head
8 and adapted to articulate within the cavity of the first implant structural member, the second
9 implant structural member comprising:

10 an outer surface and a lip; and

11 an inner surface forming a cavity having a generally spherical shape, the
12 inner surface additionally including a web, the web extending around only a portion of the
13 lip of the second implant structural member, including an inner surface that is a
14 continuation of the generally spherical shaped inner surface of the second implant structural
15 member cavity and shaped to correspond generally to an outer surface of the implant stem
16 head,

17 the web adapted to allow the implant stem head to be inserted into the second
18 implant structural member cavity when the implant stem head is oriented in a first
19 orientation and constrain the implant stem head within the cavity so that the implant stem
20 head cannot be oriented in the first orientation when the implant stem head is oriented in a
21 second orientation and attached to the stem; and

22 (c) an implant stem head comprising:

23 a generally spherical body having a surface configured to correspond to the web
24 enabling the implant stem head to be inserted into the second implant structural member
25 when the implant stem head is in the first orientation; and
26 a cavity adapted to receive a femoral stem component.

1 31. The prosthesis of claim 30 wherein the inner surface of the web is shaped to
2 cooperate with the implant stem head as the implant stem head articulates relative to the
3 second implant structural member.

1 32. The device of claim 30, wherein the web is capable of being positioned
2 superiorly within a patient.

1 33. The device of claim 30, wherein a center point of the implant stem head is
2 not in the same position as a center point of the second implant structural member when the
3 implant stem head is positioned within the second implant structural member.

1 34. The device of claim 30, wherein the web forms a D-shaped opening.

1 35. The device of claim 30, wherein the web comprises a curved edge.

1 36. The device of claim 30, wherein the implant stem head is comprised of
2 ceramic.

1 37. The device of claim 30, wherein the implant stem head is comprised of
2 metal.

1 38. The device of claim 30, wherein the second implant structural member is
2 comprised of ceramic.

1 39. The device of claim 30, wherein the second implant structural member is
2 comprised of metal.

1 40. The device of claim 30, wherein the second implant structural member is
2 comprised of plastic.

1 41. The device of claim 30, wherein the first implant structural member is
2 comprised of ceramic.

1 42. The device of claim 30, wherein the first implant structural member is
2 comprised of metal.

1 43. The device of claim 30, wherein the first implant structural member is
2 comprised of plastic.

1 44. The device of claim 14, wherein the cavity in the implant stem head
2 comprises an opening positioned on the surface of the implant stem head that is configured
3 to correspond to the web.

1 45. A prosthetic device for use in replacing at least part of a hip joint comprising:

2 (a) an implant structural member adapted to receive a head of an implant stem,
3 the implant structural member comprising:

4 an outer surface adapted to articulate within an outer shell which is adapted
5 to articulate within an acetabulum, and a lip; and

6 an inner surface forming a cavity having a generally spherical shape, the
7 inner surface additionally including a web, the web extending around only a portion of the
8 lip of the implant structural member, including an inner surface that is a continuation of the
9 generally spherical shaped inner surface of the implant structural member cavity and
10 shaped to correspond generally to an outer surface of the implant stem head,

11 the web adapted to allow the implant stem head to be inserted into the
12 structural member cavity when the implant stem head is oriented in a first orientation and
13 constrain the implant stem head within the cavity so that the implant stem head cannot be
14 oriented in the first orientation when the implant stem head is oriented in a second
15 orientation and attached to the stem;

16 wherein the inner surface of the web is shaped to cooperate with the implant stem
17 head as the implant stem head articulates relative to the implant structural member;

18 (b) an implant stem head comprising:

19 a generally spherical body having a surface configured to correspond to the web
20 enabling the implant stem head to be inserted into the implant structural member when the
21 implant stem head is in the first orientation; and
22 a cavity adapted to receive a femoral stem component; and
23 (c) a femoral stem component adapted to be coupled to the implant stem head.

1 46. A method of replacing at least part of a hip joint in a patient, comprising:

2 (a) providing a prosthesis, comprising:

3 (i) positioning an implant structural member adapted to receive an
4 implant stem head, the implant structural member comprising:

5 an outer surface adapted to articulate within an outer shell which is adapted
6 to articulate within an acetabulum, and a lip; and

7 an inner surface forming a cavity having a generally spherical shape, the
8 inner surface additionally including a web, the web extending around only a portion of the
9 lip of the implant structural member, including an inner surface that is a continuation of the
10 generally spherical shaped inner surface of the implant structural member cavity and
11 shaped to correspond generally to an outer surface of the implant stem head,

12 the web adapted to allow the implant stem head to be inserted into the
13 structural member cavity when the implant stem head is oriented in a first orientation and
14 constrain the implant stem head within the cavity so that the implant stem head cannot be
15 oriented in the first orientation when the implant stem head is oriented in a second
16 orientation and attached to the stem; and

17 (ii) aligning an implant stem head with the implant structural member, the
18 implant stem head comprising:
19 a generally spherical body having a surface configured to correspond to the
20 web enabling the implant stem head to be inserted into the implant structural member when
21 the implant stem head is in the first orientation; and
22 a cavity for receiving a femoral stem component;
23 (iii) inserting the implant stem head into the cavity located within the
24 implant structural member;
25 (iv) rotating the implant stem head within the cavity of the implant
26 structural member until the cavity located within the implant stem head is positioned to
27 receive a femoral stem component; and
28 (v) attaching a femoral stem component to the implant stem head;
29 (b) surgically implanting the prosthesis, including
30 (i) implanting the femoral stem of the femoral component in the femur of
31 a patient and
32 (ii) installing the prosthesis in the acetabulum of a pelvis.

1 47. The method of claim 46 wherein the inner surface of the web is shaped to
2 cooperate with the implant stem head as the implant stem head articulates relative to the
3 implant structural member.

1 48. The method of claim 46, wherein attaching the femoral stem component
2 comprises using an adhesive.

1 49. The method of claim 46, wherein attaching the femoral stem component
2 comprises using a mechanical connection.

1 50. The method of claim 46, wherein rotating the implant stem head within the
2 cavity of the implant structural member comprises rotating the implant stem head about 90
3 degrees.

1 51. An implant structural member adapted to receive the head of an implant
2 stem, comprising:
3 an outer surface and a lip; and
4 an inner surface forming a cavity having a generally spherical shape, the inner
5 surface additionally including a web, the web extending around only a portion of the lip of
6 the implant structural member, including an inner surface that is a continuation of the
7 generally spherical shaped inner surface of the implant structural member cavity and
8 shaped to correspond generally to an outer surface of the implant stem head,
9 the web adapted to allow the implant stem head to be inserted into the structural
10 member cavity when the implant stem head is oriented in a first orientation and constrain
11 the implant stem head within the cavity when the implant stem head is oriented in a second
12 orientation and attached to the stem such that the implant stem head can articulate within
13 the implant structural member but cannot be removed from the implant structural member
14 once it is attached to the stem.

1 52. The implant structural member of claim 50 wherein the inner surface of the
2 web is shaped to cooperate with the implant stem head as the implant stem head articulates
3 relative to the implant structural member.

1 53. The implant structural member of claim 50, wherein the web forms a
2 generally D-shaped opening.

1 54. The implant structural member of claim 50, wherein the web comprises a
2 curved edge.

1 55. The implant structural member of claim 50, wherein the implant structural
2 member is comprised of ceramic.

1 56. The implant structural member of claim 50, wherein the implant structural
2 member is comprised of metal.

1 57. The implant structural member of claim 50, wherein the implant stem head is
2 comprised of ceramic.

1 58. The implant structural member of claim 50, wherein the implant stem head is
2 comprised of metal.

1 59. The implant structural member of claim 50, wherein the web comprises an
2 inner surface having a radius of curvature equal to a radius of curvature forming the inner
3 surface of implant structural member.

1 60. An implant structural member adapted to receive the head of an implant
2 stem, comprising:
3 an outer surface and a lip; and
4 an inner surface forming a cavity having a generally spherical shape, the inner
5 surface additionally including a web, the web extending around only a portion of the lip of
6 the implant structural member, including an inner surface that is a continuation of the
7 generally spherical shaped inner surface of the implant structural member cavity and
8 shaped to correspond generally to an outer surface of the implant stem head,
9 the web adapted to allow the implant stem head to be inserted into the structural
10 member cavity when the implant stem head is oriented in a first orientation and constrain
11 the implant stem head within the cavity so that the implant stem head cannot be oriented in
12 the first orientation when the implant stem head is oriented in a second orientation and
13 attached to the stem such that the implant stem head can articulate within the implant
14 structural member but cannot be removed from the implant structural member once it is
15 attached to the stem.

1 61. The implant structural member of claim 60 wherein the inner surface of the
2 web is shaped to cooperate with the implant stem head as the implant stem head articulates
3 relative to the implant structural member.

1 62. The implant structural member of claim 60, wherein the web forms a
2 generally D-shaped opening.

1 63. The implant structural member of claim 60, wherein the web comprises a
2 curved edge.

1 64. The implant structural member of claim 60, wherein the implant structural
2 member is comprised of ceramic.

1 65. The implant structural member of claim 60, wherein the implant structural
2 member is comprised of metal.

1 66. The implant structural member of claim 60, wherein the implant stem head is
2 comprised of ceramic.

1 67. The implant structural member of claim 60, wherein the implant stem head is
2 comprised of metal.

1 68. The implant structural member of claim 60, wherein the web comprises an
2 inner surface having a radius of curvature equal to a radius of curvature forming the inner
3 surface of implant structural member.

1 69. An implant comprising:

2 (a) an implant structural member adapted to receive an implant stem head,

3 comprising:

4 an outer surface and a lip; and

5 an inner surface forming a cavity having a generally spherical shape, the inner

6 surface additionally including a web, the web extending around only a portion of the lip of

7 the implant structural member, including an inner surface that is a continuation of the

8 generally spherical shaped inner surface of the implant structural member cavity and

9 shaped to correspond generally to an outer surface of the implant stem head,

10 the web adapted to allow the implant stem head to be inserted into the structural

11 member cavity when the implant stem head is oriented in a first orientation and constrain

12 the implant stem head within the cavity so that the implant stem head cannot be oriented in

13 the first orientation when the implant stem head is oriented in a second orientation and

14 attached to the stems such that the implant stem head can articulate within the implant

15 structural member but cannot be removed from the implant structural member once it is

16 attached to the stem; and

17 (b) an implant stem head comprising:

18 a generally spherical body having a surface configured to correspond to the web

19 enabling the implant stem head to be inserted into the implant structural member when the

20 implant stem head is in the first orientation; and

21 a cavity for receiving a femoral component.

1 70. The implant of claim 69 wherein the inner surface of the web is shaped to
2 cooperate with the implant stem head as the implant stem head articulates relative to the
3 implant structural member.

1 71. The implant of claim 69, wherein the web is capable of being positioned
2 superiorly within a patient.

1 72. The implant of claim 69, wherein a center point of the implant stem head is
2 not in the same position as a center point of the implant structural member when the
3 implant stem head is positioned within the implant structural member.

1 73. The implant of claim 69, wherein the web forms a generally D-shaped
2 opening.

1 74. The implant of claim 69, wherein the web is comprises a curved edge.

1 75. The implant of claim 69, wherein the implant stem head is comprised of
2 ceramic.

1 76. The implant of claim 69, wherein the implant stem head is comprised of
2 metal.

1 77. The implant of claim 69, wherein the implant structural member is comprised
2 of ceramic.

1 78 The implant of claim 69, wherein the implant structural member is comprised
2 of metal.

1 79. The implant of claim 69, wherein the cavity in the implant stem head
2 comprises an opening positioned on the surface of the implant stem head that is configured
3 to correspond to the web.

1 80. A prosthetic device comprising:

2 (a) a first implant structural member having a generally spherical shape and
3 adapted to be received by an acetabulum, the first implant structural member comprising a
4 cavity adapted to receive a second implant structural member and including at least one
5 opening in an outside surface of the first implant structural member providing access to the
6 cavity;

7 (b) a second implant structural member adapted to receive an implant stem head
8 and adapted to be received in the cavity of the first implant structural member, the second
9 implant structural member comprising:

10 an outer surface and a lip; and

11 an inner surface forming a cavity having a generally spherical shape, the
12 inner surface additionally including a web, the web extending around only a portion of the
13 lip of the second implant structural member, including an inner surface that is a

14 continuation of the generally spherical shaped inner surface of the second implant structural
15 member cavity and shaped to correspond generally to an outer surface of the implant stem
16 head,

17 the web adapted to allow the implant stem head to be inserted into the second
18 implant structural member cavity when the implant stem head is oriented in a first
19 orientation and constrain the implant stem head within the cavity so that the implant stem
20 head cannot be oriented in the first orientation when the implant stem head is oriented in a
21 second orientation and attached to the stem such that the implant stem head can articulate
22 within the implant structural member but cannot be removed from the implant structural
23 member once it is attached to the stem; and

24 (c) an implant stem head comprising:

25 a generally spherical body having a surface configured to correspond to the web
26 enabling the implant stem head to be inserted into the second implant structural member
27 when the implant stem head is in the first orientation; and

28 a cavity adapted to receive a femoral stem component.

1 81. The prosthesis of claim 80 wherein the inner surface of the web is shaped to
2 cooperate with the implant stem head as the implant stem head articulates relative to the
3 second implant structural member.

1 82. The device of claim 80, wherein the web is capable of being positioned
2 superiorly within a patient.

1 83. The device of claim 80, wherein a center point of the implant stem head is
2 not in the same position as a center point of the second implant structural member when the
3 implant stem head is positioned within the second implant structural member.

1 84. The device of claim 80, wherein the web forms a D-shaped opening.

1 85. The device of claim 80, wherein the web comprises a curved edge.

1 86. The device of claim 80, wherein the implant stem head is comprised of
2 ceramic.

1 87. The device of claim 80, wherein the implant stem head is comprised of
2 metal.

1 88. The device of claim 80, wherein the second implant structural member is
2 comprised of ceramic.

1 89. The device of claim 80, wherein the second implant structural member is
2 comprised of metal.

1 90. The device of claim 80, wherein the second implant structural member is
2 comprised of plastic.

1 91. The device of claim 80, wherein the first implant structural member is
2 comprised of ceramic.

1 92. The device of claim 80, wherein the first implant structural member is
2 comprised of metal.

1 93. The device of claim 80, wherein the first implant structural member is
2 comprised of plastic.

1 94. The device of claim 64, wherein the cavity in the implant stem head
2 comprises an opening positioned on the surface of the implant stem head that is configured
3 to correspond to the web.

1 95. A prosthetic device for use in replacing at least part of a hip joint comprising:
2 (a) an implant structural member adapted to receive a head of an implant stem,
3 the implant structural member comprising:
4 an outer surface and a lip; and
5 an inner surface forming a cavity having a generally spherical shape, the
6 inner surface additionally including a web, the web extending around only a portion of the
7 lip of the implant structural member, including an inner surface that is a continuation of the
8 generally spherical shaped inner surface of the implant structural member cavity and
9 shaped to correspond generally to an outer surface of the implant stem head,

10 the web adapted to allow the implant stem head to be inserted into the
11 structural member cavity when the implant stem head is oriented in a first orientation and
12 constrain the implant stem head within the cavity so that the implant stem head cannot be
13 oriented in the first orientation when the implant stem head is oriented in a second
14 orientation and attached to the stem such that the implant stem head can articulate within
15 the implant structural member but cannot be removed from the implant structural member
16 once it is attached to the stem;

17 wherein the inner surface of the web is shaped to cooperate with the implant stem
18 head as the implant stem head articulates relative to the implant structural member;

19 (b) an implant stem head comprising:

20 a generally spherical body having a surface configured to correspond to the web
21 enabling the implant stem head to be inserted into the implant structural member when the
22 implant stem head is in the first orientation; and

23 a cavity adapted to receive a femoral stem component; and

24 (c) a femoral stem component adapted to be coupled to the implant stem head.

1 96. A method of replacing at least part of a hip joint in a patient, comprising:

2 (a) providing a prosthesis, comprising:

3 (i) positioning an implant structural member adapted to receive an
4 implant stem head, the implant structural member comprising:

5 an outer surface and a lip; and

6 an inner surface forming a cavity having a generally spherical shape, the
7 inner surface additionally including a web, the web extending around only a portion of the

lip of the implant structural member, including an inner surface that is a continuation of the generally spherical shaped inner surface of the implant structural member cavity and shaped to correspond generally to an outer surface of the implant stem head,

the web adapted to allow the implant stem head to be inserted into the structural member cavity when the implant stem head is oriented in a first orientation and constrain the implant stem head within the cavity so that the implant stem head cannot be oriented in the first orientation when the implant stem head is oriented in a second orientation and attached to the stem such that the implant stem head can articulate within the implant structural member but cannot be removed from the implant structural member once it is attached to the stem; and

(ii) aligning an implant stem head with the implant structural member, the implant stem head comprising:

a generally spherical body having a surface configured to correspond to the web enabling the implant stem head to be inserted into the implant structural member when the implant stem head is in the first orientation; and

a cavity for receiving a femoral stem component;

(iii) inserting the implant stem head into the cavity located within the implant structural member;

(iv) rotating the implant stem head within the cavity of the implant structural member until the cavity located within the implant stem head is positioned to receive a femoral stem component; and

(v) attaching a femoral stem component to the implant stem head;

(b) surgically implanting the prosthesis, including

- 31 (i) implanting the femoral stem of the femoral component in the femur of
32 a patient and
33 (ii) installing the prosthesis in the acetabulum of a pelvis.

1 97. The method of claim 96 wherein the inner surface of the web is shaped to
2 cooperate with the implant stem head as the implant stem head articulates relative to the
3 implant structural member.

1 98. The method of claim 96, wherein attaching the femoral stem component
2 comprises using an adhesive.

1 99. The method of claim 96, wherein attaching the femoral stem component
2 comprises using a mechanical connection.

1 100. The method of claim 96, wherein rotating the implant stem head within the
2 cavity of the implant structural member comprises rotating the implant stem head about 90
3 degrees.